Supporting Information

Hydrogen Production via Water Splitting Using Noble gas Plasma-Collisional Splitting (NgPCS)

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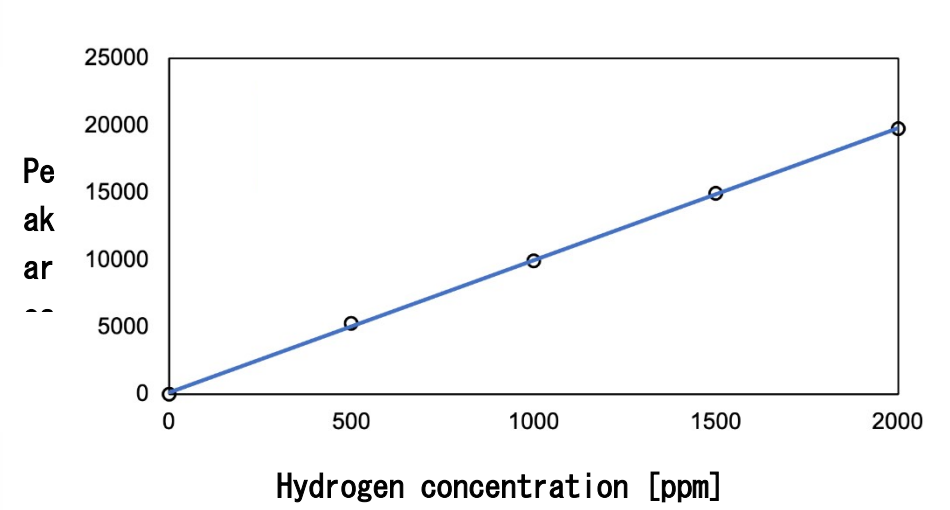

Figure S1. Calibration curve for hydrogen gas obtained using a standard sample in TCD-gas chromatography analysis.

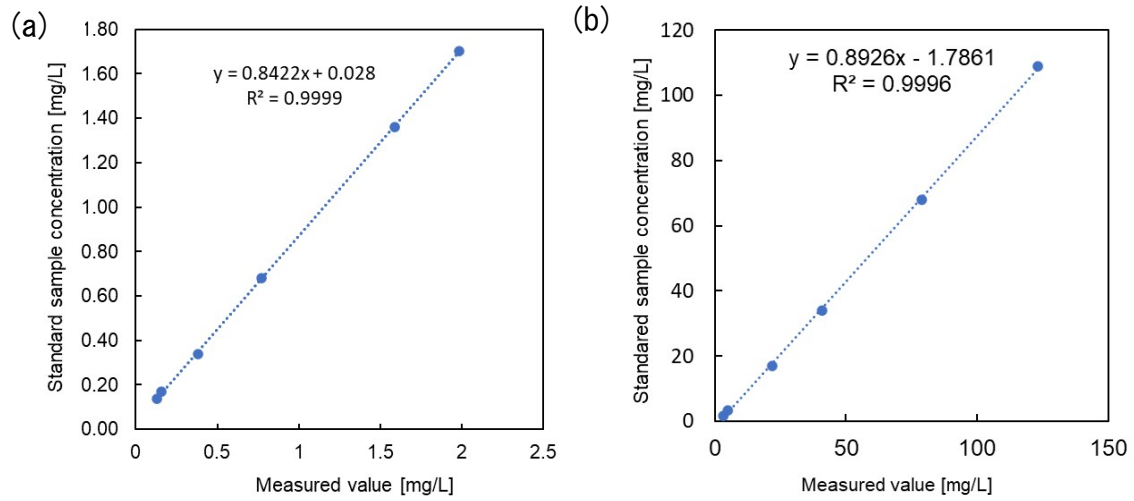

Figure S2. Calibration curve for hydrogen peroxide using a standard sample in a Digital Water Analyzer.

Standard chemicals:

- Standard hydrogen gas (99.99% purity) was obtained from GL Science Co., Ltd.
- Hydrogen peroxide standard solution (H_2O_2 (aq.): 30%) was purchased from Wako Chemical Co., Ltd.

Table S1 Spectroscopic data by the Ar plasma employed in this study.

Ion	Wavelength [nm]	Upper Energy level E_j [eV]	Transition probability A x 10^6 [s^{-1}]	Statistical weight g
Ar-I	687.13	14.71371	2.78	3
Ar-I	706.72	13.30477	3.80	5
Ar-I	714.70	13.28518	0.63	3
Ar-I	731.17	14.85121	1.70	3
Ar-I	738.40	13.30477	8.50	5
Ar-I	750.39	13.48247	45.0	1
Ar-I	763.51	13.1743	24.5	5
Ar-I	784.94	14.85121	0.35	3
Ar-I	805.33	14.71371	0.86	3